OIB - C-130H Hercules #439 04/23/15 Science Report

Aircraft:
C-130H Hercules #439 (See full schedule)
Date:
Thursday, April 23, 2015
Mission:
OIB
Mission Location:
Kangerlussuaq, Greenland
Mission Summary:

Mission: Jakobshavn-Eqip-Store (priority: baseline)

This is a modified version of the 2011 Jakobshavn-Lake mission, whose main purpose is to extend the ICESat grid begun with Jakobshavn 01 farther upstream. We also densify the ICESat grid over the Eqip Sermia catchment area north of Jakobshavn, and we refly the centerlines of Eqip Sermia, Kangilerngata Sermia, Sermeq Kujalleq and Store Glaciers. Finally we refly the Rink and Kangerdlugssup centerlines.

This morning's weather satellite imagery showed skies over the greater Jakobshavn basin which were almost completely clear. Today's weather models showed that the situation was primed to improve even more, with steady outflow (a downsloping, and hence warming and drying, air mass) developing during the morning in the area. We enjoyed weather which was almost perfect for the area, with the exception of some mild to occasionally moderate turbulence in small portions of the outlet glacier valleys.

We replaced the troublesome GPS splitter arrangement after yesterday's mission, and we encountered no more problems with it today. In fact all instruments performed well today, with two ultimately minor exceptions. These were brought on after we suffered a total power failure to all science instruments approximately 3 hours into the flight. UPS protection did its job well, however, and the instruments themselves were shut down gracefully on battery power, with the exception of GPS systems, which remained up. That accomplished, we orbited to mark time while the power problem was debugged. After approximately 20 minutes of searching, a difficult-to-find circuit breaker was found to be tripped. Once it was reset, we obtained good indications on the power systems, and began to gradually bring up the science instruments, one by one, in order to avoid stressing the power system. We successfully brought all science instruments back into operation within a few minutes, except for the ATM T3 (wide scanner) transceiver and the DMS primary camera. We proceeded with the science mission at this point, at exactly the point we had left off. Within 20 minutes of that, the ATM T3 transceiver was brought back into operation, and within an hour of that the primary DMS camera was also repaired. The only ultimate effects of the power system failure were (a) a lengthening of the flight time by about 40 minutes, (b) loss of T3 data on the Store Glacier centerline run while T5 operated normally, and (c) operation of the DMS backup camera full-time after the power failure. The root cause of the tripped breaker was later determined to be an intermittent electrical short, which was corrected. We also note that at no time was the operation of the aircraft itself affected by the power failure. The aircraft and its avionics operated normally throughout the mission.

The repair of both the ATM T3 and the DMS primary camera problems were made possible by the XChat functionality built into the C-130's "housekeeping" data system. This convenient communications medium made it possible for onboard engineers from both instrument teams to obtain help from their counterparts on the ground, and hence solve their problems quickly. We use XChat for many helpful things, such as in-flight weather checks, tracking of moving ice camps in sea ice, and our educational chat sessions with hundreds of students in their classrooms. The value of XChat to our airborne science operations is tremendous.

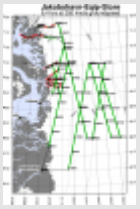
We conducted a ramp overflight at 1500' AGL.

Data volumes:
ATM: 27 Gb
CAMBOT: 100 Gb
DMS: 148 Gb
Ku-Band Radar: 226 Gb
MCoRDS: 2.9 Tb
Narrow Swath ATM: 35 Gb
NSERC Onboard Data: TBD
Snow Radar: 226 Gb

total data collection time: 8.9 hrs

Images:

Map of Jakobshavn-Eqip-Store mission



Read more

Jakobshavn Glacier calving front

Read more

Tributary of Rink Glacier

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Lower Kangerdlugssup Glacier

Read more

Submitted by:
John Sonntag on 04/23/15
Related Flight Report:

C-130H Hercules #439 04/23/15

Flight Number:
Jakobshavn-Eqip-Store
Payload Configuration:
OIB
Nav Data Collected:
No
Total Flight Time:
9.2 hours
Submitted by:
Luci Crittenden on 04/23/15
Flight Segments:

From:	BGSF	**To:**	BGSF
Start:	04/23/15 10:18 Z	**Finish:**	04/23/15 19:30 Z
Flight Time:	9.2 hours		
Log Number:	151002	**PI:**	Michael Studinger

Funding Source:	Bruce Tagg - NASA - SMD - ESD Airborne Science Program
Purpose of Flight:	Science
Comments:	Completion of baseline priority Jakobshavn-Equip-Store mission today.

Flight Hour Summary:

	151002
Flight Hours Approved in SOFRS	334.4
Total Used	297.6
Total Remaining	36.8

151002 Flight Reports

Date	Flt #	Purpose of Flight	Duration	Running Total	Hours Remaining
03/12/15	ATF	Check	1.5	1.5	332.9
03/13/15	PTF - GPS	Check	2	3.5	330.9
03/13/15	PTF - Radar #1	Check	0.8	4.3	330.1
03/13/15 - 03/14/15	PTF - Radar #2	Check	4.5	8.8	325.6
03/16/15	PTF - Radar #3	Check	2.4	11.2	323.2
03/17/15	Transit	Transit	7.8	19	315.4
03/19/15	Nansen Gap	Science	7.4	26.4	308
03/24/15	Sea Ice - Zigzag East	Science	8.2	34.6	299.8
03/25/15	Sea Ice North Pole Transect ? Thule	Science	8.2	42.8	291.6
03/26/15	Sea Ice - Laxon Line	Science	9.2	52	282.4
03/27/15 - 03/28/15	Sea Ice - East Beaufort Sea	Science	8.2	60.2	274.2
03/29/15 - 03/30/15	Sea Ice - North Beaufort Loop	Science	8.9	69.1	265.3
03/30/15 - 03/31/15	Sea Ice - SIZRS Zigzag	Science	8.1	77.2	257.2
04/01/15	Sea Ice - South Basin Transect	Science	8.8	86	248.4
04/03/15	Sea Ice - South Canada Basin	Science	7.4	93.4	241
04/06/15	OIB Transit from BGTL-BGSF	Transit	3.3	96.7	237.7
04/08/15	Helheim-Kangerdlussuag	Science	8	104.7	229.7
04/09/15	K-EGIG Summit	Science	8.3	113	221.4
04/10/15	Southeast Glaciers 01	Science	8	121	213.4
04/11/15	East Glaciers 01	Science	8	129	205.4
04/13/15	Southeast Coastal	Science	7.7	136.7	197.7
04/14/15	Helheim-Kangerdlussuaq Gap B	Science	7.9	144.6	189.8
04/17/15	Umanaq B	Science	7.5	152.1	182.3
04/18/15	Southwest Coast A	Science	8.1	160.2	174.2
04/20/15	Penny 01	Science	6.3	166.5	167.9
04/21/15	Thomas-Jakobshaven 01	Science	8.7	175.2	159.2
04/22/15	Southeast Flank 01	Science	7.6	182.8	151.6
04/23/15	Jakobshavn-Eqip-Store	Science	9.2	192	142.4
04/24/15	Geikie 02	Science	8.3	200.3	134.1
04/25/15	Jakobshaven 02/ Mop Up	Science	6.9	207.2	127.2
04/27/15	Southwest Coastal B	Science	8	215.2	119.2
04/28/15	Southeast Glaciers 02	Science	7	222.2	112.2

04/29/15	TRANSIT BGSF-BGTL	Transit	2.5	224.7	109.7
04/30/15	ATM Laser Repair Checkout	Science	2.3	227	107.4
05/01/15	NW Coastal A	Science	7.2	234.2	100.2
05/05/15	IceSat-2 North / CryoSat-2 SARIn	Science	8.2	242.4	92
05/06/15	North Glaciers 01	Science	8.2	250.6	83.8
05/07/15	Devon-Barnes 01	Science	7.8	258.4	76
05/08/15	Zigzag West	Science	7.2	265.6	68.8
05/11/15	Northwest Glaciers 01	Science	7.8	273.4	61
05/12/15	North-Central Gap 02	Science	8.1	281.5	52.9
05/15/15	North-Central Gap 01	Science	7.3	288.8	45.6
05/21/15	Transit - Thule to Bangor, ME	Transit	6.5	295.3	39.1
05/22/15	Transit - Bangor, ME to WFF	Transit	2.3	297.6	36.8

Flight Reports began being entered into this system as of 2012 flights. If there were flights flown under an earlier log number the flight reports are not available online.